

## II. REMARKS

Claims 1-11 are pending in this application. Claims 1-7 have been withdrawn from consideration, claims 8-10 were previously presented, and new claim 11 is added by way of this Reply. Claims 8-10 are under examination and stand rejected. Claims 8 and 10 are amended to remove the language regarding "zero-strain". This amendment is supported by the specification. See Published Application US 2002/0102205 ("Specification") at [0028]. Claim 8 was also amended to make it clear that the particles comprise an average primary particle size of less than 100 nm. Support for this amendment is found in the Specification at [0011]. New claim 11 is supported by the specification at [0011]. Since the new claim and amendments are supported by the specification as filed, there is no issue of new matter.

## III. THE REJECTIONS UNDER 35 U.S.C. § 103 OVER ATSUMI IN VIEW OF PERAMUNAGE

Claims 1-5 stand rejected under 35 U.S.C § 103 over U.S. Patent No. 6,120,938 (issued September 19, 2000) to Y. Atsumi *et al.* ("Atsumi") in combination with D. Peramunage & K. M. Abraham, *Preparation of Micron-Sized  $\text{LiTi}_5\text{O}_{12}$  and its Electrochemistry in Polyacrylonitrile Electrolyte-Based Lithium Cells*, 145 J. ELECTROCHEM. SOC. 2609-2615 (1998) ("Peramunage").

Applicants respectfully request that this rejection be withdrawn because the reference combination neither motivates one of skill in the art to carry out Applicant's invention nor teaches or suggests all material limitations of Applicant's claims.

To support obviousness, the cited prior art must suggest to one of ordinary skill in the art that the claimed invention could be carried out with a reasonable likelihood of success. Both the suggestion and the expectation of success must be founded in the prior art. In re Dow Chem. Co., 837 F.2d 469, 472 (Fed. Cir. 1988).

And it is well settled that to establish a *prima facie* case of obviousness, the prior art reference (or references when combined) must teach or suggest all the claim limitations. MPEP § 2143.03; In re Royka, 180 U.S.P.Q. 580; Ex Parte Masato Ono, 2000 WL 33520305, \*3; Atlas Powder Co. v. E.I. DuPont De Nemours & Co., 750 F.2d 1569, 1575 (Fed. Cir. 1984).

Applicant's invention is directed to use of lithium titanate (e.g.,  $\text{Li}_4\text{Ti}_5\text{O}_{12}$ ) as an active electrode material for use in electrochemical cells. In complete contrast, Atsumi is directed to use of hydrogen lithium titanate ( $\text{H}_x\text{Li}_{1-x}\text{Ti}_2\text{O}_4$ ) and does not teach or suggest use of lithium

titanate as an active electrode material. Atsumi uses lithium titanate merely as a starting material for the synthesis of hydrogen lithium titanate, by acid treatment.

Excerpts from Atsumi's specification, which clearly show Atsumi is directed solely to hydrogen lithium titanate as the electrode material, and not lithium titanate, are set forth below.

(Atsumi Abstract) A non-aqueous electrolyte secondary battery is disclosed in which hydrogen lithium titanate prepared by an acid process of lithium titanate

(Atsumi at column 2, lines 37-41) [T]he inventors found that hydrogen lithium titanate obtained by substituting protons for lithium ions of lithium titanate has a charging/discharging capacity which is enlarged in proportion to pH (proton substitution quantity x).

(Atsumi at column 2, lines 55-57) Hydrogen lithium titanate according to the present invention can be prepared by processing lithium titanate with an acid.

(Atsumi at column 3, lines 43-47) Specifically, the non-aqueous electrolyte secondary battery of the present invention includes a hydrogen lithium titanate compound as an active material. The hydrogen lithium titanate can be prepared by an acid process of lithium titanate.

The Examiner states that Atsumi teaches lithium titanate intercalation compound of formula  $\text{Li}_x\text{Ti}_2\text{O}_4$  at col. 5, lines 26-34. See OFFICE ACTION at page 3, lines 3-4. This is not correct. The  $\text{Li}_x\text{Ti}_2\text{O}_4$  recited by Atsumi at col. 5, lines 26-34 is taught merely as a starting material for hydrogen lithium titanate not as an intercalation compound of an electrode. Furthermore, nowhere (including comparative Example 2 at Atsumi col. 8, lines 55 et seq.) does Atsumi teach or suggest  $\text{Li}_x\text{Ti}_2\text{O}_4$  having a particle size approaching Applicant's claimed range of less than 100 nm. Rather, all Atsumi's particle size data is directed to hydrogen lithium titanate.

In addition, the Examiner has conceded in the Office Action that Peramunage does not teach or suggest zero-strain lithium titanate of a particle size of less than 100 nm. See, OFFICE ACTION at page 1, paragraphs 3 and 4.

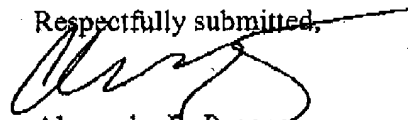
In sum, at the very best, the combination of Peramunage and Atsumi teaches an electrode intercalated with hydrogen lithium titanate. Such a teaching does not suggest Applicant's claims, which recite nanoparticulate lithium titanate of less than 100 nm, which is useful as the

active material in an electrode. In view of this discussion, Applicant respectfully requests that the § 103 rejection over the combination of Peramunage and Atsumi be withdrawn.

#### IV. CONCLUSION

In view of the above remarks, Applicants have overcome all rejections, and reconsideration is requested. No fee is required for entry of this Reply. If any fee is due, however, please charge the required fee to deposit account number 501358. A Petition for a one (1) month extension of time under 37 C.F.R. § 1.136 with fee authorization is filed herewith.

Respectfully submitted,



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